



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/759,444

01/14/2004

Chi tse Wu

H0002800US(4015)

7831

62993

7590

04/03/2009

BUCHALTER NEMER
18400 VON KARMAN AVE.
SUITE 800
IRVINE, CA 92612

EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/03/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/759,444	Applicant(s) WU ET AL.	
	Examiner Rodney G. McDonald	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-76 and 79-88 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-76 and 79-88 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3-11-09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-31 and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae (KR 2001-511244) in view of Gilman (U.S. Pat. 6,086,735) and Kulkarni et al. (U.S. Pat. 6,283,357).

Regarding claim 24, Bae teach a physical vapor deposition target comprising a shape, the shape includes at least one cup having a first end and a second end in opposing relation to the first end; the first end having an opening extending therein; the cup having a hollow therein; the hollow extending from the opening in the first end toward the second end; the cup having an interior surface defining a periphery of the hollow; the shape including an exterior surface extending around an exterior of the cup and in opposing relation to the interior surface; the exterior surface comprising a region which wraps around at least a portion of the second end with a rounded corner; the rounded corner having a radius of curvature that is twice the radius of the target. (See Figure; Abstract) As to the target comprising a cast ingot the process is given no weight since the product is substantially identical to the claimed subject matter. It should be noted that [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of

Art Unit: 1795

a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

Regarding claim 25, Bae teach the interior surface does not comprise a rounded corner having a radius of curvature of at least about 1 inch. (See Figure)

Regarding claim 31, Bae teach the target can be aluminum. (See Abstract)

Regarding claim 40, the exterior surface wraps entirely around the second end. (See Figure)

The differences between Bae and the present claims is that the radius of curvature being at least 1 inch is not discussed (Claim 24), a sputtering surface defined along the interior surface of the cup is not discussed (Claim 24), the interior surface comprises a rounded corner having a radius of curvature of at least about 1 inch (Claim 26), the interior surface comprising a rounded corner having a radius of curvature of at least about 1 inch and wherein the rounded corner of the interior surface is within the rounded corner of the exterior surface is not discussed (Claim 27), the target consisting of high purity copper is not discussed (Claim 28), the target consisting essentially of Ta is not discussed (Claim 29), the target consisting essentially of titanium is not discussed (Claim 30), the radius of curvature being at least about 1.5 inches is not discussed (Claim 41), the radius of curvature being at least about 1.7 inches is not discussed (Claim 42), and the radius of curvature being at least about 1.8 inches is not discussed (Claim 43).

Regarding the radius of curvature being at least 1 inch (Claim 24), Gilman et al. teach that the target diameter should vary between ten and fourteen inches. A ten inch diameter target may be used to sputter a six inch diameter wafer. A twelve inch target is used to sputter an inch wafer. (Column 4 lines 42-55) As discussed above the radius of curvature should be twice the radius of the target. Thus the radius of curvature should be ten inches since Gilman et al. suggest a target radius of five inches for sputtering a six inch wafer. (See Bae and Gilman et al. discussed above)

Regarding claims 41-43, Gilman et al. teach that the target diameter should vary between ten and fourteen inches. A ten inch diameter target may be used to sputter a six inch diameter wafer. A twelve inch target is used to sputter an inch wafer. (Column 4 lines 42-55) As discussed above the radius of curvature should be twice the radius of the target. Thus the radius of curvature should be ten inches since Gilman et al. suggest a target radius of five inches for sputtering a six inch wafer. (See Bae and Gilman et al. discussed above)

The motivation for utilizing the features of Gilman et al. is that it allows for forming films on wafers. (Column 4 lines 42-55)

Regarding a sputtering surface defined along the interior surface of the cup (Claim 24), Kulkarni et al. teach a sputter surface on the interior of a cup shaped target. (See Fig. 3; Column 5 lines 6-9)

Regarding claims 26, 27, Kulkarni et al. teach in Fig. 3 that the interior surface should comprise a rounded corner corresponding to the exterior corner curvature. (See Fig. 3) Since the radius of curvature can be at least one inch the interior corner

Art Unit: 1795

corresponding to the radius of curvature as shown by Kulkarni et al. would have at least a 1 inch radius of curvature.

Regarding claim 28, Kulkarni et al. teach the target can be made of a high purity material such as copper. (Column 3 lines 35-52)

Regarding claim 29, Kulkarni et al. teach the target can be made of a high purity material such as Ta. (Column 3 lines 35-42)

Regarding claim 30, Kulkarni et al. teach the target can be made of a high purity such as Ti. (Column 3 lines 35-42)

The motivation for utilizing the features of Kulkarni et al. is that it allows for providing a target for depositing material on wafers. (Column 1 lines 10-22)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bae by utilizing the features of Gilman et al. and Kulkarni et al. because it allows for depositing on wafers.

Claims 32-37, 39 and 44-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Gilman et al. and Kulkarni et al. as applied to claims 24-31, 40-43 above, and further in view of Kardokus et al. (U.S. Pat. 6,113,761).

The differences not yet discussed is alloying copper (Claims 32, 33), the alloying element for copper being selected from the group consisting of Ag, Al, In, Zn, B, Ga, Mn, Sn, Ge, Ti and Zr (Claim 34), the element added to copper ranging from at least about 100 ppm to less than about 10% by weight (Claim 35), the element added to copper ranging from at least about 1000 ppm to about 2% by weight (Claim 36), the target being CuSn with Sn being present from about 100 ppm to about 3 atomic percent

Art Unit: 1795

(Claim 37), the target being CuAg with Ag being present from about 100 ppm to about 3 atomic percent (Claim 39) and the grain size of the target is not discussed (Claims 44-49).

Regarding claims 32, 33, Kardokus et al. teach a target of copper alloyed with at least one of Ag or Sn. (Column 1 lines 57-59, lines 63-67)

Regarding claim 34, Kardokus et al. teach the alloying element to be Ag or Sn. (Column 1 lines 64-67)

Regarding claims 35, 36, Kardokus et al. teach that typically alloying level is greater than 1000 ppm. (Column 5 lines 8-16)

Regarding claim 37, Kardokus et al. teach Sn present with CuSn. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

Regarding claim 39, Kardokus et al. teach Ag present with CuAg. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

Regarding claim 44-49, Kardokus et al. teach the grain size to be not more than 50 microns. (Column 8 lines 57-59)

The motivation for utilizing the features of Kardokus et al. is that it allows for forming interconnects on wafers. (Column 2 lines 43-45)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Kardokus et al. because it allows for forming interconnects on wafers.

Claims 32-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Gilman et al. and Kulkarni et al. as applied to claims 24-31, 40-43 above, and further in view of Pavate et al. (U.S. Pat. 6,391,163).

The differences not yet discussed is alloying copper (Claims 32, 33), the alloying element for copper being selected from the group consisting of Ag, Al, In, Zn, B, Ga, Mn, Sn, Ge, Ti and Zr (Claim 34), the element added to copper ranging from at least about 100 ppm to less than about 10% by weight (Claim 35), the element added to copper ranging from at least about 1000 ppm to about 2% by weight (Claim 36) and the target being CuAl with Al being present from about 100 ppm to about 3 atomic percent (Claim 38).

Regarding claims 32-38, Pavate et al. teach a copper target alloyed with aluminum in the range of 0.01% to about 10%. (Column 3 lines 21-29)

The motivation for utilizing the features of Pavate et al. is that it allows for improving conductive film members. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Pavate et al. because it allows for improving conductive film members.

Claims 50-57 and 61-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Gilman et al. and Kulkarni et al. as applied to claims 24-31, 40-43 above, and further in view of Lai et al. (U.S. Pat. 6,179,973).

The differences not yet discussed is using the target in an apparatus. (Claims 50-57 and 61-63)

Regarding claims 50-57, 61-63, Lai et al. teach utilizing a hollow cup shaped target in a sputtering apparatus for depositing a layer. (See abstract; fig. 3A)

The motivation for utilizing the features of Lai et al. is that it allows for depositing on wafers with good step coverage. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Lai et al. because it allows for depositing on wafers with good step coverage.

Claims 58, 60, 64-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Gilman et al. and Kulkarni et al. and further in view of Lai et al. as applied to claims 24-31, 40-43, 50-57 and 61-63 above, and further in view of Kardokus et al. (U.S. Pat. 6,113,761).

The differences not yet discussed is the target being CuSn with Sn being present from about 100 ppm to about 3 atomic percent (Claim 58), the target being CuAg with Ag being present from about 100 ppm to about 3 atomic percent (Claim 60) and the grain size of the target is not discussed (Claims 64-66).

Regarding claim 58, Kardokus et al. teach Sn present with CuSn. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

Regarding claim 60, Kardokus et al. teach Ag present with CuAg. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

Regarding claim 64-66, Kardokus et al. teach the grain size to be not more than 50 microns. (Column 8 lines 57-59)

The motivation for utilizing the features of Kardokus et al. is that it allows for forming interconnects on wafers. (Column 2 lines 43-45)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Kardokus et al. because it allows for forming interconnects on wafers.

Claims 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bae in view of Gilman et al. and Kulkarni et al. and further in view of Lai et al. as applied to claims 24-31, 40-43, 50-57 and 61-63 above, and further in view of Pavate et al. (U.S. Pat. 6,391,163).

The difference not yet discussed is the target being CuAl with Al being present from about 100 ppm to about 3 atomic percent (Claim 38).

Regarding claim 38, Pavate et al. teach a copper target alloyed with aluminum in the range of 0.01% to about 10%. (Column 3 lines 21-29)

The motivation for utilizing the features of Pavate et al. is that it allows for improving conductive film members. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Pavate et al. because it allows for improving conductive film members.

Claims 67, 68, 70 and 72-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. (U.S. Pat. 6,283,357) in view of Kardokus et al. (U.S. Pat. 6,113,761).

Regarding claim 67, Kulkarni et al. teach a three dimensional physical vapor deposition target comprising a material comprising one or more of Cu, Ni, Co, Ta, Al and Ti. The microstructure of the target should comprise fine, uniform grains. The shape includes at least one cup having a first end and a second end in opposing relation to the first end. The first end having an opening extending therein. The cup having a hollow therein. The hollow extending from the opening in the first end toward the second end. the cup having an interior surface defining a periphery of the hollow. A sputtering surface defined along the interior of the cup. (See Fig. 3; Column 3 lines 24-51; Column 5 lines 15-20) As to the target comprising a cast ingot the process is given no weight since the product is substantially identical to the claimed subject matter. It should be noted that [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

Regarding claim 68, Kulkarni et al. teach the target can consist essentially of copper. (Column 3 lines 24-51)

The differences between Kulkarni et al. and the present claims is that the average grain size of less than or equal to 250 microns is not discussed (claim 67), the target being CuSn with Sn being present from about 100 ppm to about 3 atomic percent

Art Unit: 1795

(Claim 70), the target being CuAg with Ag being present from about 100 ppm to about 3 atomic percent (Claim 72) and the grain size of the target is not discussed (Claims 73-76).

Regarding claim 67, 73-76, Kardokus et al. teach the grain size to be not more than 50 microns. (Column 8 lines 57-59)

Regarding claim 70, Kardokus et al. teach Sn present with CuSn. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

Regarding claim 72, Kardokus et al. teach Ag present with CuAg. Alloying levels typically can be at least about 100 ppm. (Column 5 lines 8-16; Column 5 lines 20-24)

The motivation for utilizing the features of Kardokus et al. is that it allows for forming interconnects on wafers. (Column 2 lines 43-45)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kulkarni et al. by utilizing the features of Kardokus et al. because it allows for forming interconnects on wafers.

Claims 79, 80, 82, 84, and 85-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. in view of Kardokus et al. as applied to claims 67, 68, 70 and 72-76 above, and further in view of Lai et al. (U.S. Pat. 6,179,973).

The differences not yet discussed is using the target in an apparatus. (Claims 79, 80, 82, 84, 85-88)

Regarding claims 79, 80, 82, 84 and 85-88, Lai et al. teach utilizing a hollow cup shaped target in a sputtering apparatus for depositing a layer. (See abstract; fig. 3A)

The motivation for utilizing the features of Lai et al. is that it allows for depositing on wafers with good step coverage. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Lai et al. because it allows for depositing on wafers with good step coverage.

Claim 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. in view of Kardokus et al. as applied to claim 67 above, and further in view of Fu et al. (U.S. Pat. 6,251,242).

The differences not yet discussed is using the target in an apparatus. (Claim 79)

Regarding claim 79, Fu et al. teach utilizing a hollow cup shaped target in a sputtering apparatus for depositing a layer. (See abstract; fig.1)

The motivation for utilizing the features of Fu et al. is that it allows for depositing in wafer holes. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Fu et al. because it allows for depositing on wafer holes.

Claims 67, 69, 73-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. (U.S. Pat. 6,283,357) in view of Michaluk (WO 00/31310).

Regarding claim 67, Kulkarni et al. teach a three dimensional physical vapor deposition target comprising a material comprising one or more of Cu, Ni, Co, Ta, Al and Ti. The microstructure of the target should comprise fine, uniform grains. The shape includes at least one cup having a first end and a second end in opposing

Art Unit: 1795

relation to the first end. The first end having an opening extending therein. The cup having a hollow therein. The hollow extending from the opening in the first end toward the second end. the cup having an interior surface defining a periphery of the hollow. A sputtering surface defined along the interior of the cup. (See Fig. 3; Column 3 lines 24-51; Column 5 lines 15-20) As to the target comprising a cast ingot the process is given no weight since the product is substantially identical to the claimed subject matter. It should be noted that [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

The differences between Kulkarni et al. and the present claims is that the average grain size of less than or equal to 250 microns is not discussed (claim 67), the target being made of tantalum with specific grain size is not discussed (claim 69) and the grain size of the target is not discussed (Claims 73-76).

Regarding claim 67, 69, 73-76, Michaluk et al. teach the grain size to be not more than 50 microns. (See Abstract)

The motivation for utilizing the features of Michaluk et al. is that it allows for forming uniform films. (See Page 1 lines 27-28)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kulkarni et al. by utilizing the features of Michaluk et al. because it allows for forming uniform films.

Claims 79, 81, and 85-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. in view of Michaluk et al. as applied to claims 67, 69, 73-76 above, and further in view of Lai et al. (U.S. Pat. 6,179,973).

The differences not yet discussed is using the target in an apparatus. (Claims 67, 69, 73-76)

Regarding claims 79, 81, 85-88, Lai et al. teach utilizing a hollow cup shaped target in a sputtering apparatus for depositing a layer. (See abstract; fig. 3A)

The motivation for utilizing the features of Lai et al. is that it allows for depositing on wafers with good step coverage. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Lai et al. because it allows for depositing on wafers with good step coverage.

Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable Kulkarni et al. in view of Kardokus et al. as applied to claims 67, 68, 70 and 72-76 above, and further in view of Pavate et al. (U.S. Pat. 6,391,163).

The differences not yet discussed is utilizing aluminum in the copper target. (claim 71)

Regarding claim 71, Pavate et al. teach utilizing aluminum ion a copper target. (Column 3 lines 20-29)

The motivation for utilizing the features of Pavate et al. is that it allows for increasing the hardness of the target. (Column 3 lines 20-29)

Therefore, it would have been obvious to one of ordinary skill in the art at the invention was made to have utilized the features of Pavate et al. because it allows for increasing the hardness of the target.

Claim 83 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kulkarni et al. in view of Kardokus et al. and further in view of Pavate et al. as applied to claims 67, 68, 70, 71-76 above, and further in view of Lai et al. (U.S. Pat. 6,179,973).

The differences not yet discussed is using the target in an apparatus.

Regarding claim 83, Lai et al. teach utilizing a hollow cup shaped target in a sputtering apparatus for depositing a layer. (See abstract; fig. 3A)

The motivation for utilizing the features of Lai et al. is that it allows for depositing on wafers with good step coverage. (See abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Lai et al. because it allows for depositing on wafers with good step coverage.

Response to Arguments

Applicant's arguments filed December 19, 2008 have been fully considered but they are not persuasive.

In response to the argument that Bae does not teach a sputtering surface defined along the interior surface of the cup, it is argued that looking at Bae one of ordinary skill in the art would see a cup with a rounded corner. Kulkarni suggest that the interior of a

Art Unit: 1795

cup can be sputtered. Therefore, one of ordinary skill in the art would modify Bae by sputtering the inner surface of the cup as suggested by Kulkarni. Bae further teach the required dimension of the rounded corner as required by Applicant's claims. (See Bae and Kulkarni discussed above)

In response to the argument that Gilman does not motivate one of ordinary skill in the art to produce a sputtering target having a cup with a hollow therein, it is argued that Gilman was relied upon to show the dimensions of a target but that Kulkarni teach one of ordinary skill in the art to produce a target having a cup with a hollow therein. (See Gilman and Kulkarni discussed above)

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to the argument that Kulkarni does not teach target made from cast ingots, it is argued that the process is given no weight since the product is substantially identical to the claimed subject matter. It should be noted that [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not

Art Unit: 1795

depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

In response to the argument that Kardokus, Lai, Pavate and Michaluk and Fu do not make up for the deficiencies of the other references, it is argued that the other references provide the teachings required by the claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

Art Unit: 1795

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
March 31, 2009